

16(1)

AUTHOR: Grinberg, G.A., Corresponding Member, Academy of Sciences, USSR

SOV/20-128-3-4/58

TITLE: Integral Equations in Which the Kernel Depends on the Absolute Value of the Difference Between the Arguments and the Interval of Variation of the Variables is Finite

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 3, pp450-453 (USSR)

ABSTRACT: The author considers the integral equations

$$(A) \int_{a_1}^{a_2} K(|x-\xi|)u(\xi)d\xi = f(x).$$

He shows that under certain assumptions the solution of the equations of type (A) and of some others can be reduced to the solution of two independent equations of second kind. The author discusses connections existing between the solutions of (A) and the solutions of simpler equations, to the solution of which the problem (A) can be reduced. The equations considered occur in physics, e.g. K can be the potential of certain central forces only depending on the distance.

~~Card 1/2~~

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On the Subject of Diffraction of Electromagnetic
Waves by an Ideally Conducting Plane With a Round
Hole

UDC 621.372.6.01
GOST 7.62-55 10-3/13

when the "shadow currents" must be accounted for and even they may be neglected. For the case of a plane which the currents are drawn, the coincidence of the results is claimed to be very close. Kolesnikova, E. N., Solov'yev, N. V., and Chernyak, A. M., have made the calculations connected with the study. There are 2 figures and 4 Soviet references.

ASSOCIATION: Technical Physics Institute, Academy of Sciences, USSR (Fiziko-
tekhnicheskoy Institut, AN SSSR)

SUBMITTED: February 10, 1959

Card 3/3

On the Subject of Diffraction of Electromagnetic
Waves by an Ideally Conducting Plane With a Round
Hole

75326
SOV/57-29-10-3/13

and $\lambda \gg 1$, two systems of equations are obtained, one for moderate values of λ and the other for sufficiently large values, the values for λ not being numerically given. From these equations the "shadow currents" may be determined. When the wavelength is small compared to the diameter of the hole, these currents decrease rapidly as the distance from the edge of the hole increases. The full current is then calculated as per Ref 1. To this purpose the vector potential A corresponding to the full current is first determined from a system of equations given by the author for two cases: when the "shadow currents" must be accounted for and when they are so small that they may be neglected. In the latter case the Huygens-Kirchoff principle allows one to simplify the equations for vector potential A . The greater the value of λ the more correct is the result obtained by using the method presented in the paper. Figures are shown on which the exact curves of variation of radiation values are represented, as well as those obtained by applying the expressions developed in the paper for the cases

Card 2/3

24,3000

100/100 100/100

AUTHORS: Grinberg, G. A., Pimenov, Yu. V.

TITLE: On the Subject of Diffraction of Electromagnetic Waves by an Ideally Conducting Plane With a Round Hole

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1959, Vol 29, Nr 10, pp 1206-1211 (USSR)

ABSTRACT: The paper states that in Ref 1-3 a method was given for the solution of problems of diffraction of plane electromagnetic waves by ideally conducting planes. In the present study this method is applied to a case of planes having a round hole. The study is limited by the assumption that $\gamma : ka = 2\pi a/\lambda \gg 1$, where λ is the wavelength, k is the wave number, and a is the radius of the hole. The formulas developed are, strictly speaking, approximate, but it is claimed that at values of $\gamma = 5$ they give radiation characteristics very close to exact. First, equations are given for determining the components of the "shadow currents" J_0 ; i.e., currents induced on the shady side of the screen, for the case of a normal impinging of a plane wave. Through a series of manipulations and integration within the boundary limits of $b = \sqrt{\gamma^2 - 1}$ and $d = \sqrt{\gamma^2 + 1}$, where $\gamma \gg 1$

Card 1/3

01(4)(3)
AUTHORS:

Grinberg, G.A., Pimenov, Yu. I.

307/57-28 10-54/10

TITLE:

Plane Problem of Diffraction on a Parabolic Cylinder With Finite Dimensions (Ploskaya zadacha diffraktsii dlya parabolicheskogo tsilindra konechnogo razmera)

PERIODICAL:

Zhurnal tekhnicheskoy fiziki, Vol 28, Nr 10, pp 2302-2309 (USSR).

ABSTRACT:

This is a study of the plane problem of diffraction of electromagnetic waves on infinitely thin, ideally conducting and finite screens. The boundary case is investigated where the wave length by far exceeds the dimensions of the screens. As an example this paper includes an approach to the problem of reflection of electromagnetic waves on a parabolic section of a cylinder of finite dimensions. It is assumed that the primary field is generated by an oscillator in the focal point of the field. It is shown that even at wave lengths which by far exceed the dimensions of the mirror a certain directivity of radiation may be found. E.N. Kolesnikova and T.A. Chernova helped with the calculations. There are 2 figures and 1 reference.

Card 1/2

57-28-3-20/33

A Method for Solving the Diffraction Problems of Electromagnetic Waves on
Ideally Conducting Flat Screens Based on the Investigation of Shadow
Currents Induced on Screens. II. Diffraction at the Semiplane and at
a Plane With an Unlimited Rectilinear Slit

ASSOCIATION: Fiziko-tekhnicheskiy institut AN SSSR, Leningrad
(Leningrad Physical-Technical Institute, AS USSR)

SUBMITTED: October 1, 1957

1. Electromagnetic waves--Diffraction 2. Mathematics

Card 3/3

7-10-34 2/25

A Method for Solving the Diffraction Problems of Electromagnetic Waves on
Ideally Conducting Flat Screens Based on the Investigation of Shadow
Currents Induced on Screens. II. Diffraction at the Semiplane and at
a Plane With an Unlimited Rectilinear Slit

induced on the semiplanes. This is done in the form of certain integrals of the tangential components of the external magnetic field at the semiplane complementary to the given semiplane. The solution of the problem in the case of the diffraction at the slit consists of the solution of two independent Fredholm integral equations of second kind. It is shown that from the obtained equations asymptotic solutions for wave-lengths small in comparison to the width of the slit can easily be obtained, in particular. It is shown by examples that the asymptotic solutions may furnish very good approximations of an exact solution, that is to say, not only when the wave length of the decreasing radiation is many times smaller than the width of slit, but also when they are equal. Moreover, it is shown that the integral equations obtained here permit a useful solution also according to the method of successive approximations. There are

Card 2/3

7-23-5-10/33

AUTHOR: Grinberg, G. A.

TITLE: A Method for Solving the Diffraction Problems of Electromagnetic Waves on Ideally Conducting Flat Screens Based on the Investigation of Shadow Currents Induced on Screens (Metod resheniya zadach diffraktsii elektromagnitnykh voln na ideal'no provodyashchikh ploskikh ekranakh, osnovannyi na izuchenii navodimykh na ekranakh tenevykh tokov)
II. Diffraction at the Semiplane and at a Plane With an Unlimited Rectilinear Slit (II. Difraktsiya na poluploskosti i na ploskosti s bezgranichnoy pryamolineynoy shchel'yu)

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1978, Vol. 28, Nr 3, pp.555-568 (USSR)

ABSTRACT: The method of shadow currents given in part I of the work is here employed for solving diffraction problems at the semiplane (problem by Sommerfeld) and at a plane with an unlimited rectilinear slit. For the case of a diffraction at the semiplane general equations are derived for the currents

Card 1/3

86-3-12/33

A Method for Solving the Diffraction Problems of Electromagnetic waves on
Ideally Conducting Flat Screens Based on the Investigation of Shadow
Currents Induced on the Screens. I. General Foundations of the Method

as far as the shadow currents on that occasion show a marked
magnitude only near the edge of the screen which also con-
siderably facilitates their finding and their investigation.
There are 5 references, 4 of which are Soviet.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN SSSR, Leningrad
(Leningrad Physical-Technical Institute, AS USSR)

SUBMITTED: October 1, 1967

1. Electromagnetic waves--Diffraction 2. Mathematics

Card 3/3

27-28-3-19/33

A Method for Solving the Diffraction Problems of Electromagnetic Waves on
Ideally Conducting Flat Screens Based on the Investigation of Shadow
Currents Induced on the Screens. I. General Foundations of the Method

screens. Here the method is given in a general form for any
threedimensional external fields. It is shown that the
problem may be reduced to the solution of a system of two
integral equations, relatively simple in their structure
for Cartesian components of the current densities induced
on the screens. Such equations are as well obtained for
the components of the total density, i.e., for the sum of
the densities of currents induced on both sides of every
screen element as for the components of the shadow current
densities. Both sets of equations are similar according to
their nature but the equations for the shadow currents are
simpler. The active external fields contained in them are
only generated by sources lying in the screen plane although
the source density of the actual primary field can be distri-
buted arbitrarily in the space surrounding the screens. It
is pointed out that the investigation of the current distri-
bution on the shadow sides of the screen is especially ex-
pedient in that case where the wave length of the decreasing
radiation is small in comparison to the screen dimensions.

Card 2/3

7-23-3-19/55

AUTHOR: Grinberg, G. A.

TITLE: A Method for Solving the Diffraction Problems of Electromagnetic Waves on Ideally Conducting Flat Screens Based on the Investigation of Shadow Currents Induced on the Screens
(Metod resheniya zadach diffraktsii elektromagnitnykh voln na ideal'no provedushchikh ploskikh ekranakh. osnovaniya na izucheniya navodimykh na ekranakh tenevnykh tokov)
I. General Foundations of the Method (I. Obshchiye osnovy metoda)

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1958, Vol. 28, Nr 3. pp. 542-554 (USSR)

ABSTRACT: In recently published paper by the author (Reference 1) a new method for solving the problem of the diffraction of electromagnetic waves on flat ideally conducting screens was suggested. This method is based on the investigation of the currents ("shadow currents") developing under the influence of the external field at the shadow sides of the

Card 1/3

A New Method for Solution of a Problem of Diffraction of Electro- 57-11-21/33
magnetic Waves on a Surface Using the Unlimited Rectilinear Slit Adopted in
Related Problems.

the application of this method for the determination of the new
form of the solution for diffraction problems on a half plane
(Sommerfeld's problem) is shown. There is 1 figure, 1 table and
2 Slavic references.

ASSOCIATION: Physical-Technical Institute AN USSR (Fiziko-tekhnicheskiy in-
stitut AN SSSR, Leningrad)

SUBMITTED: July 22, 1957

AVAILABLE: Library of Congress.

Card 2/2

GRINBERG, G. A.

57-11-21/33

AUTHOR:

Grinberg, G. A.

TITLE:

A New Method for Solution of a Problem of Diffraction of Electromagnetic Waves on a Surface Using the Unlimited Rectilinear Slit Adopted in Related Problems (Novyy metod resheniya zadachi difraktsii elektromagnitnykh voln na ploskosti s bezgranichnoy pryamolineynoy shchel'yu i rodstvennykh yey problem).

PERIODICAL:

Zhurnal Tekhn.Fiz., 1957, Vol.27, Nr 11, pp.2595-2605 (USSR)

ABSTRACT:

Here a new method for solution of diffraction problems is introduced. It is based on the investigation of currents that develop on the dark side of the screen under the influence of the exterior field. When applying this method for the case of diffraction at the slit, it permits to reduce the solution of the problem to a solution of Fredholm's equations of the second kind which is simple as to the structure. From these especially the asymptotic form of the solution for wave lengths, which are small as compared with the slit width, can easily be found. In the case of a normal impingement of a flat wave on the slit it is shown by an example that this asymptotic form can produce a very good approximation with respect to the precise solution, not only if the wave length of the impinging ray is much smaller than the slit width, but also if it is equal to the slit width. Moreover

Card 1/2

GRINBERG, G. A.

AUTHOR: Grinberg, G. A.

57-10-33/33

TITLE: On the Criticism of P. P. Kas'yankov of my Method for Obtaining the Basic Electron-Optical Equations for Beams with Curved Axis (Po povodu kritiki P. P. Kas'yankovym moyego metoda polucheniya osnovnykh elektronnoopticheskikh uravneniy dlya puchkov s krivo-lineynoy os'yu) (Letter to the Editor)

PERIODICAL: Zhurnal Tekhn. Fiz., 1957, Vol. 27, Nr 10, pp. 2425-2431 (USSR).

ABSTRACT: This work is an answer to the critics from behalf of Mr. Kas'yankov in his book "Theory of the Electro-Magnetic Systems with Curved Axis", 1956, as well as in his dissertation "Methods for the Calculation of Electron-Optical Systems", 1957, referring to Grinberg's proposed method for the deduction of the basic electron-optical equations for beams with curved axis. 1942 in DAN SSSR, 37, 197. Here the author shows that the statements of Kas'yankov on the incorrectness of Grinberg method is based on a misunderstanding and that the equations deduced by him do not differ at all from his own, that is to say, that they do not offer anything principally new. There are 6 Slavic references.

~~Date~~ 1/2

On Diffraction of Electromagnetic Waves on Infinitely Thin Ideally-57-10-19/33
Conducting Flat Screens.

The suggested method is demonstrated by the investigation of the
diffraction on an infinitely thin andideally-conducting disk.
There are 4 Slavic references.

ASSOCIATION: Leningrad Physical Technical Institute of the AN USSR (lenin-
gradskiy fiziko-tekhnicheskii institut AN SSSR)

SUBMITTED: April 15, 1957

AVAILABLE: Library of Congress.

Card 2/2

GRINBERG, G. A.

57-10-19/33

AUTHORS: Grinberg, G. A., Pimenov, Yu. V.

TITLE: On Diffraction of Electromagnetic Waves on Infinitely Thin Ideally-Conducting Flat Screens (K voprosu o diffraktsii elektromagnitnykh voln na beskonechno tonkikh ideal'no provodyashchikh ploskikh ekranakh)

PERIODICAL: Zhurnal Tekhn.Fiz., 1957, Vol. 27, Nr 10, pp. 2326-2339 (USSR)

ABSTRACT: A new method for the solution of diffraction problems of the electromagnetic waves on infinitely thin ideally-conducting screens is given. The method is based upon the solution of two independent integral equations with simple structure and is on principle to be used for flat screens of every form. The necessity of taking into account the so-called conditions at the finity which determine the character of the possible specialities of an electromagnetic field at a sharp edge of the infinitely thin ideally-conducting screen is removed here. These conditions are replaced by the obvious demand for the approaching to zero of the component normal to the circuit of the current induced to the screen. It appears from the obtained equation that in the case of sufficiently small values of kl (k = the wave number and l = a certain length which characterizes the dimensions of the screen) the solution of the investigated wave problem is taken back to such one of a series of successive electrostatic problems.

Card 1/2

Remarks on the Paper of P. P. Kas'yankov "On the Equations of
Electron Trajectories in Electron-optical Systems
with a Curvilinear Axis." 51-6-24/25

follows that approximations obtained algebraically
from the exact equations are also identical. This
does not exclude the possibility of numerical errors
in applications of my method (Refs. 3,8). There are
8 Russian references.

SUBMITTED: November 12, 1957.

AVAILABLE: Library of Congress.

Card 2/2

AUTHOR: Grinberg, G. A.

51-6-24/25

TITLE: Remarks on the Paper of P. P. Kas'yankov "On the Equations of Electron Trajectories in Electron-optical Systems with a Curvilinear Axis." (Ref.1) (Po povodu stat'i P. P. Kas'yankova "Ob uravneniyakh trayektorii elektrona v elektronnoopticheskikh sistemakh s krivolineynoy os'yu" .)

PERIODICAL: Optika i Spektroskopiya, 1957, Vol. III, Nr. 6, p.673. (USSR)

ABSTRACT: A letter. The fifth chapter of the above paper states that the method, proposed by me (i.e. by Grinberg) in 1942, for derivation of the fundamental electron-optical equations for curvilinear beams (Ref.2) leads allegedly to erroneous results. As shown in Ref.5 these allegations are wrong and they are based on an incorrect identification of a local system of coordinates x, y, z with a curvilinear system s, p, q . The equations derived by Kas'yankov in tensor form (Ref.1) lead to more cumbersome calculations but are nevertheless essentially identical with my equations (Ref.2) in vector form. Since the exact equations of Kas'yankov and my own are identical, it

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Category : USSR/Radiophysics - Radiation of Radio Waves. Antennas

I-5

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 4488

the source in the integral in terms of the functions $A^{(1)}(\alpha)$. It is proved, that the solution obtained is a general solution of the problem. It is shown that for the case of high frequencies, the solution assumes a form corresponding to the geometrical-optics approximation. The solution is generalized to include the case of arbitrary location of the source along the axis of the cylinder. Bibliography, 10 titles.

Card : 3/3

Category : USSR/Radiophysics -- Radiation of Radio Waves. Antennas

I-5

Abs Jour : Ref Zhur -- Fizika, No 2, 1957, No 4488

satisfying all the requirements, including the radiation condition at infinity and the correct behavior at the source. The author considers first the case when the source of oscillation is located along the focal line. The partial solution to the problem is found in the form $u = A^{(1)}(\alpha) B^{(1)}(\beta)$, where u is the secondary electric field and (α, β) are the parabolic coordinates; $A^{(1)}(\alpha)$ and $B^{(1)}(\beta)$ are expressed in terms of degenerate hypergeometric functions; the real part of the parameter ν varies in the range $-1/2 < \text{Re } \nu < 0$. It is possible to assume that the general solution is of the form

$$u(\alpha, \beta) = \int_{-\delta-i\infty}^{-\delta+1-i\infty} C(\nu) A_{\nu}^{(1)}(\alpha) B_{\nu}^{(1)}(\beta) d\nu$$

where $0 < \delta < 1/2$. On the surface of the parabolic screen ($\beta = \beta_0$), the electric field E vanishes, i.e., $u = -E_0$, where E_0 is the field of the source. This leads to the equation

$$\int_{-\delta-i\infty}^{-\delta+1-i\infty} C(\nu) A_{\nu}^{(1)}(\alpha) B_{\nu}^{(1)}(\beta_0) d\nu = -E_0$$

The unknown function $C(\nu)$ is thus found by expanding the field of

Card : 2/3

GRINBERG, G. A.

Category : USSR/Radiophysics - Radiation of Radio Waves - Antennas

I-5

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 4488

Author : Grinberg, G. A., Let'shev, M. N., Skal'skaya, I. P., Uflyand, Ye. S.
Inst : Leningrad Physicotechnical Institute, Academy of Sciences, USSR, Leningrad

Title : Electromagnetic Field of Linear Radiator, Located Inside and Ideally-Conducting Parabolic Screen

Orig Pub : Zh. eksperiment. i teoret. fiziki, 1956, 30, No 3, 528-543

Abstract : Analysis of the problem of the reflection of an electromagnetic wave from a conducting screen, shaped like a parabolic cylinder. The source of oscillation is considered to be linear and placed inside the cylinder, and the current in the source is $I = I_0 e^{i\omega t}$ where $I_0 = \text{const}$ is the amplitude of the current and ω is the angular frequency. It is shown that the results obtained in previously-published works are not sufficiently well founded. An accurate solution of the problem is given and is reduced to the solution of an equation with separable variables; the fundamental difficulty lies in a suitable choice of the partial solutions,

Card : 1/3

C.A. Gorbunov

- 5.) The time dependence of the amperage from the moment of switching on impulse voltage onwards up to the approach of $\frac{5}{8}$ the current to its stationary value is ascertained.
- 6.) Although all computations were carried out for a constant anode voltage, the same method may, with some modifications, be applied to a time-dependent potential.

BT

C. A. Ginzburg

3.) Now the third phase, which begins with the arrival of the first electrons at the anode and in which the entire space between anode and cathode is filled by a space charge, is discussed. 4/5

4.) There follows the enumeration and numerical solution of the equations for the last phase of the stabilization of the current; in this phase the diode has no longer any electrons which have been emitted from the cathode before the vanishing of the field.

G. A. Grinberg

1.) The process of the anode is investigated. The basic equation of this process is written down and discussed for the case that the emission capacity of the cathode is unlimited and the current is constant as regards time.

2.) The equations for the second phase of the process are written down in which the electric field E_x near the cathode is equal to zero, whereby, however, the foremost electrons have not yet reached the anode. The solution of this equation is undertaken step by step, it is, however, valid only until the first electrons have reached the anode.

WCA Chiborg

First of all the basic equations of the stabilized process in electron devices of flat construction are to be formulated in detail and reduced to a simple form. Secondly, uncomplicated computation systems are to be demonstrated, with which it is possible, in each concrete case, to obtain the desired solution from those equations with any degree of exactitude. From these results it should then be possible to check the degree of exactitude of the approximation methods.

(1) The passing through a plane diode of a current produced on the occasion of the sudden switching of an impulse voltage

GRINBERG, G. A.

publ. in October 20th 1955

rec. 1 November 23rd 1955

reviewed: February 21st 1956

transl. in Russian by 25th 1956 — D419421, p. 103

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Zurn. techn. fiz., 25, 2183-2192 (1955)

On the Theory of Stabilized Processes in Electron
Devices or in Electric Circuits containing such
Devices. (Russian)

by G. A. GRINBERG

(over)

GRINBERG, G.A.

4

GRINBERG, G. A., POLOVINSKI, A. M., and VILAND, Ye. S.,
 Characterization of stress of an elastic thin wedge-shaped
 plate with a fixed and a free side (in Russian), Izvestiya Akademiya Nauk SSSR, 1955, No. 12, 191-198, 1955.

The problem of characterizing the state of stress in an infinite
 elastic thin wedge-shaped plate of angle α is solved. In particu-
 lar, for a concentrated load acting at an arbitrary point of the
 wedge and subject to boundary conditions stated in the title, an
 explicit solution is obtained.

The method of solution utilizes the techniques of the Mellin
 transform, and the solution is exhibited in the form of an integral
 in the complex domain along a suitable path. Explicit results are
 obtained for the elements per unit load and for various values of
 the wedge angle α and Poisson's ratio. It is indicated how to ap-
 proach the solution for an arbitrary load.

J. Brandstatter, USA

GRINBERG, G.

USER/ Electronics - Output amplification

Card 1/1 Pub. 89 - 9/27

Authors : Grinberg, G.

Title : ~~XXXXXXXXXXXXXXXXXXXX~~
Output amplification of the "RDP-51"

Periodical : Radio 1, 18-19, Jan 1955

Abstract : A device (OPUU) for output amplification of the "RDP-51" receiver and transmitter is described. The "RDP-51" is used at regional radio stations for transmission of radio programs to individual radio listeners (radio points). The device "OPUU" was developed by the author and some of his assistants. This device, when connected to the "RDP-51", doubles the output of the latter. Coupling the "OPUU" to the "RDP-51" does not require many changes in the circuit of the latter. From the circuit presented one can see how it should be done. Diagrams.

Institution :

Submitted :

Grinberg, G. A., Lebedev, N. N., Skal'skaya, I. P., and
 Gulyaev, L. S. Wave problem for a parabolic mirror.
 Doklady Akad. Nauk SSSR (N.S.) 93, 961-963 (1954).
 (Russian)

A critical survey of papers on the diffraction of electro-
 magnetic waves by a parabolic cylinder, viz., [1] P. S.
 Epstein, Dissertation, Munich, 1914; [2] P. S. Epstein,
 Enzyk. Math. Wiss., Bd. 5, Teubner, Leipzig, 1915, p. 511;
 [3] W. Magnus, Jber. Deutsch. Math. Verein. 50, 140-161
 (1940); [4] W. Magnus, Z. Physik 118, 343-356 (1941)
 [these Rev. 2, 56; 9, 125]. Limitations of the method used
 in [1] and [2] are mentioned (convergence of the series in
 part of space only). Lack of a detailed proof in [3] for the
 fact that the solution satisfies the radiation condition is
 emphasized and a full proof is announced. An expansion in
 terms of products of parabolic cylinder functions of integral
 (positive and negative) order is derived for the field pro-
 duced by a line source in the focal line of the cylinder. The
 proof is sketched and based on [3]. The result is used for
 filling a gap in [4] by showing that the diffracted wave in
 [4] satisfies the condition of being finite on the focal line.
 The series for the diffracted wave found by the authors is
 shown to converge only in a finite part of the interior of the
 cylinder.

W. Magnus (New York, N. Y.).

GRIMBERG, G. A.

"The Magnetic Field of Stationary Currents Flowing Within Cavities or Channels in Iron of a Permeability which may be Taken as Infinitely Great," Dok AN SSSR, 94, No.5, pp. 839-842, 1954.

Full translation by E.R.Hope - 19 Jan 55

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GRINBERG, G. A.

Grinberg, G. A., and Bonstedt, B. E. Elements of an exact theory of the wave field of transmission lines. Akad. Nauk SSSR, Zhurnal Tekhn. Fiz. 24, 67-95 (1954). (Rus-
sian)

The author treats the problem of propagation of electromagnetic waves along a circularly cylindrical wire parallel to the (plane) earth's surface. The dielectric constant and conductivity of the wire and of the earth are arbitrary. It is immediately assumed, however, that the radius of the wire is much smaller than its elevation above the earth; the effect of the earth is taken as a perturbation and only the first order effect is included. In this manner the effective parameters (series impedance and shunt admittance per unit length) of this transmission line operating in the dominant mode are calculated. The calculation is repeated with the earth, instead of being represented by a semi-infinite medium of large refractive index, introduced into the problem through skin-effect type boundary conditions at its surface. The numerical results of the simplified calculation agree well with those of the more rigorous one.

J. Shmays (New York, N. Y.).

Grimberg, G.A.

✓ 2080. Grimberg, G. A., and Poplavskii, R. P., Bending of semi-circular thin plates with restrained circular edge and free edge (in Russian). *Inzhener. Sbornik, Akad. Nauk SSSR* 10, 83-88, 1954.

Thorough analysis of a thin semicircular plate for any type of loading on the basis of elastic deflections expressed in polar coordinates. Method is demonstrated by numerical example, assuming uniformly distributed load. It is also explained how this method can be applied to this structural type under other conditions; e.g., similar plate freely supported around the circular boundary. Author refers also to paper discussing the method analyzing rectangular thin plates originated by P. F. Papkovitch [Prikl. Mat. Mekh. 12, 1953].

J. J. Polivka, USA

GRINBERG, G. A.

USSR/Physics - Hydrodynamics

11 Jun 53

"Stationary Flow of a Liquid and Gas Toward Imperfect Wells."

DAN SSSR, Vol 91, No 2, pp 213 - 216

Author cites his article in the symposium entitled 'Sbornik. Voprosy Ratsional'noy Razrabotki Gazovykh Mestorozhdeniy' (Problems of the Rational Development of Gas Deposits), Trudy VNIIGAZ, L(9)4. Employs methods for integrating the hydrodynamic partial-derivative equations established by G. A. Grinberg (Izbrannyye Voprosy Matematicheskoy (Collected Problems of the Math Theory of Electrical and Magnetic Phenomena.), published by Acad Sci USSR, 1946) to determine the distribution of velocity potential ϕ in a homogeneous cylindrical stratum with hydrodynamic imperfections. Presented by Acad A. I. Nekrasov.

276T93

Grimberg, G. R.

537.533.3

1886. On some classes of static axially symmetric electric and magnetic fields, for which the basic equation of electron optics admits of solution in terms of known functions. G. A. GRIMBERG, *Zh. tekhn. fiz.*, 23, No. 11, 1904-14 (1953) (Russian).

It is shown that Picht's equation $\rho'' + \lambda_0(\phi'/\phi)\rho = 0$ has solutions of the form $\rho = (\phi/\phi_0)C_\nu(\phi)$, where $C_\nu(\phi)$ is an arbitrary Bessel function of order ν and ϕ is also related to x through Bessel functions. In a particularly simple case the potential function reduces to $\phi = \frac{1}{2}(\phi_1 + \phi_2) + \nu^{-1}(\phi_2 - \phi_1)\tan^{-1}(x/a)$. In all cases ϕ is a monotonic function of x , tending to ϕ_1 as $x \rightarrow -\infty$ and to ϕ_2 as $x \rightarrow +\infty$. A similar theory applies to magnetic fields of the form $H_0[1 + x^2/a^2]^{-1/2}[1 + \alpha^{-1}\tan^{-1}(x/a)]^{1/2}$; Glaser's field is the limiting case of $x \rightarrow \infty$. It is also shown that $\rho = \sqrt{2C_{1/2a}}[1 + \sqrt{3}(x/a)^2]$ for an electrostatic potential $\phi = \phi_0 \exp[-(x/a)^2]$.

J. C. H. JENNINGS

GRINBERG, G. A.

Index Aeronautics
Vol. 9
Sept. 1953

180/99

624.023.731.23

On the Method Suggested by
Papkovich for the Solution
of Problems of the Theory of

Prikl. Mat. Mekh.
17, (2), 211-228

Elasticity for a Rectangular
Area, and of the Problem of
Bending Rectangular Thin Plate
With two Fixed Edges, and on
Some of its Generalisations 1953

G. A. Grinberg

U.S.S.R.

Research into the problem of bending rectangular plates with fixed opposite edges, as well as into the problem of the theory of elasticity for a rectangular area led Papkovich into posing the following problem: simultaneous expansion of two independent real functions, in a given interval, into a series of functions satisfying a differential equation of fourth order. In connection with the solution of the bi-harmonic equation Papkovich has put forward certain arguments in favour of such simultaneous expansion, which, however cannot be considered as mathematically sufficient. The possibility of such expansions in a series are examined and the solution is obtained of corresponding biharmonic problems for an area limited of two concentric circles and two radii from one common centre. It is said that the solutions for the bending of semi-circular plate with free straight section and fixed periphery under distributed surface load can be easily obtained.

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GRINBERG, G. A.

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USSR/Mathematics - Elasticity Problems Jan/Feb 53

"Method of Solution of the General Biharmonic Problem for a Rectangular Region With Specified Values Along the Boundary of the Function and Its Normal Derivative," G. A. Grinberg, N. W. Lebedev, and Ya. S. Ufland, Leningrad Polytech Inst

"Priklad Matemat i Mekhan" Vol 17, No 1, pp 73-86

Presents recently proposed method for solution of subject problem, suited for application to two-dimensional theory of elasticity and to a bent thin elastic plate with fixed boundary. Constructs such system in a rectangular region with arbitrary ratio of sides. Examples and tables given. Received 19 Sep 52.

242T63

AMR

Oct. '51

3040. Ginzburg, G. A. On the solution of the plane problem of the theory of elasticity and on the flexure of a thin plate with clamped edges (in Russian). *Doklady Akad. Nauk SSSR* (N.S.) 76, 5, 661 (1951), Feb. 1951.

Author solves the boundary problem $\nabla^2 \psi = \Phi$ in D , $\psi|_{\partial D} = 0$, $\partial \psi / \partial n|_{\partial D} = g$, where n is the boundary of the domain D , and $\partial \psi / \partial n$ and ψ are given. The problem is split into the two separate problems $\nabla^2 \psi = \Phi$, $\nabla^2 \psi = 0$. By the use of "charge" formulae F can be expressed as a series of orthogonal functions ψ , derived from an arbitrary but complete set of harmonic functions S_n . Then, author succeeds in splitting the integration of the initial fourth-order equation into the integration of two second-order equations, even if the boundary conditions for these two equations are not identical. This is possible because F is expressed in terms of the ψ , and of $\partial \psi / \partial n$ and $\psi|_{\partial D}$, satisfying the boundary conditions.

As an example, author considers a clamped square plate under uniformly distributed load and compares the values for the maximum deflection and maximum bending moment calculated by using his formulae in the series in the ψ , with those given in Love's tables. There is no plate and shell. The error is within the accuracy of engineering computations.

A second example treats the plane stress problem of an elastic square under a tensile uniformly and symmetrically distributed load, a portion of the edge is free. For various ratios of the ratio between the maximum values of the sum of principal stresses at the corners obtained by the ψ on the previous problem, and by other methods, is again well within engineering accuracy.

Finally, the author derives the values of the deflections of a clamped plate which can be determined from those of a simply supported plate by means of a formula.

George H. Brown, USA

9

ASTM 5.4 METALLURGICAL LITERATURE CLASSIFICATION

177

5

Grinberg, G. A.

In a second part the author uses Green's theorem to obtain a formula for the solution of the boundary value problem in which $D(u)$ is the general self-adjoint expression in n independent variables, and an inhomogeneous boundary condition is imposed upon a closed surface containing an n -dimensional volume.

R. N. Goss (San Diego, Calif.)

2/2

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[Signature]

GRINBERG, G. A.

* Grinberg, G. A. On the solution of the equations of mathematical physics with partially or completely separable variables. Sbornik posvyashchennyi semidesyatiletiyu akademika A. F. Ioffe [Collection in honor of the seventieth birthday of academician A. F. Ioffe], pp. 50-60. Izdat. Akad. Nauk SSSR, Moscow, 1950. Let a function u of the variables $s_1, \dots, s_m$ satisfy a linear partial differential equation of the form

I: F/W

MS

(1) $D[u] = f(s_1, \dots, s_m)$,
where $D[u] = D_0(s_1)u + D_1(s_2, \dots, s_m)u$ and

$$r(s_1)D_0(s_1)u = \frac{\partial}{\partial s_1} \left[p(s_1) \frac{\partial u}{\partial s_1} \right] + q(s_1)u,$$

together with inhomogeneous boundary conditions of Dirichlet, Neumann, or mixed type at the ends of the interval (a_1, b_1) over which s_1 ranges. Then u can be expanded in terms of the eigenfunctions Q_n of the equation $D_0(s_1)Q_n + \lambda_n Q_n = 0$, satisfying homogeneous boundary conditions of the same type. The coefficients in the expansion satisfy a differential equation with fewer independent variables by one than (1). The present paper extends this method to the case where p , q , and r are piecewise continuous within (a_1, b_1) . The results are used to solve the problem of heat conduction in a bar consisting of two homogeneous sections of different material.

(over)

PA 61/49T90

USSR/Physics
Elastic Theory
Mathematics

Jul/Aug 49

"Bending of a Rectangular Plate With Supported Edges Under Arbitrary Load," G. A. Grinberg, Ya. S. Uflyand, Leningrad Physicotech Inst, Acad Sci USSR, 31 pp

"Prikladnaya Matematika 1 Mekh" Vol XIII, No 4

Problem of bending of a rectangular plate with reinforced edges, which has great practical importance, has not been solved accurately up to now. Approximate solutions lead to cumbersome calculations. Reduces problem to the solution

USSR/Physics (Contd)

61/49T90

Jul/Aug 49

of an integral equation which admits of a very close approximation. Derives approximate formulas which may be used to calculate bending elements (sags of bending moments, intersecting forces) for various external loads. Submitted 11 Feb 49.

61/49T90

GRINBERG, G. A.

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900051-6

GRINBERG, G. A.

Selected problems of mathematical theories to electrical and magnetic phenomena
Moskva, 1948. 727 p. (49-22315)

QC18.G85

GRUNBERG, G.

PA 54T61

USSR/Mathematics - Equations, Differ- Jul/Aug 1946
ential

Mathematics, Applied

"A New Method of Solution of Certain Boundary Problems for Equations of Mathematical Physics Permitting Separation of Variables," G. Grunberg, Phys Tech Inst, Acad Sci USSR, 20 pp

"Journal of Physics USSR" Vol X, No 4

Suggests a more general method, than Fourier-Lame method of particular solutions, for solving differential equations of mathematical physics permitting separation of variables. Received, 18 Oct 1945.

54T61

GRUNBERG, G. A.

WE

2479

517.941.9:53

A New Method for Solving Certain Boundary Problems for Equations of Mathematical Physics permitting a Separation of Variables. G. A. Grunberg. (Bull. Acad. Sci. U.R.S.S., ser. phys.) 1946, Vol. 10, No. 2, pp. 141-168. In Russian. For problems of mathematical physics reducible to the integration of linear differential equations with separable variables and with linear boundary conditions the well known Fourier-Lamé method of partial solutions is normally used. This method is only a particular case of a more general and

adequate method. As an example, the Laplace equations (1,1) for a rectangle are considered and the method of partial solutions is applied to Dirichlet's problem with boundary conditions (2,1) and (2,2). A complete solution is obtained but complications arise when the method is applied to Neumann's problem with boundary conditions (2,14). Consequently a solution in the form (2,27) is derived and it is emphasized that this is radically different from that obtained by the Fourier-Lamé method. The proposed method is then generalized and applied to the following problems: (a) the distribution of current in a uniform conducting cylinder when the current is admitted through a circular electrode AB on one of the ends of the cylinder and taken off from a ring electrode CD on its curved surface (Fig. 3), (b) the propagation of electromagnetic and acoustic waves in an infinite straight waveguide with a sectorial cross-section (Fig. 5), and (c), as (a) but where the cylinder consists of a number of coaxial cylindrical surfaces of different conductivities. An English version was noted in 1338 of June.

1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									
PROCESSES AND PROPERTIES INDEX																			
517.941.9 -- 82										2437									
New method of solving some boundary problems in equations in mathematical physics, where separation of variables is permissible. GRINBERG, G. A. <i>Bull. Acad. Sci., USSR, Ser. Phys.</i>, 10 (No. 2) 127-68 (1946) In Russian.																			
ASAC-SLA METALLURGICAL LITERATURE CLASSIFICATION																			

Handwritten: 84 (left), AS7 (right)

116

Discontinuation of War

SOME THEOREMS RELATING TO THE EVALUATION
OF POTENTIALS AND CHARGES INDUCED ON CON-
DUCTORS PLACED IN A GIVEN EXTERNAL FIELD
BY G. A. GRUNBERG. (*Comptes Rendus (Dok-
lady) de l'Acad. des Sci. de l'URSS*, 10th March
1943, Vol. 38, No. 7, pp. 203-205, in English.)
For other work see 740 of March.

W.F.

General Physics

**The Principles of a General Theory of the Local
Action of Static Electric and Magnetic Fields**
G. A. Gerasimov, *Ukr. Akad. Nauk*, 1957,
No. 12, pp. 461-488. The Russian text
method is proposed for determining the
number of obtaining an electron of a
certain form. The number of possible
of particles and forms is added to the
type of field of interaction of a
particle with a field.

948

1ST AND 2ND ORDERS										PROCESSES AND PROPERTIES INDEX										1ST AND 2ND ORDERS									
SA										B 65																			
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621.385.3/.5										On the theory of the passage of an electron current through triodes																			
										and multi-electrode tubes and on the notion of control voltage in the																			
										presence of space charge. Grunberg, G. A. J. Phys., USSR, 7,6, pp.																			
										279-285, 1943.																			
LENINGRAD Polytechnical Inst. im Kalinin;																													
Physico-Tech. Inst., Acad. Sci. USSR																													
ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION																													
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20										21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40										41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60									

537.222.1 2291

On the distribution of electricity on thin uncoated conducting layers. GRONMAN, G. A. *J. Phys. USSR*, 7, 3, pp. 93-98, 1943.---The exact distribution is known only for a limited number of shapes (e.g. cylindrical, spherical or ellipsoidal). A new method is now given for determining the distribution in the

cases (I) of a plane lamina, of any shape, placed in an external field, and (II) an arbitrary portion of a thin spherical shell. Similar results may be obtained for a cylindrical lamina, placed in a two-dimensional field. It is noted that in the general case of an arbitrary thin shell in an arbitrary external field the exact distribution of charge is given by the solution of a certain integral equation.

I. S. G.

ASB-31A METALLURGICAL LITERATURE CLASSIFICATION

FROM: 537.222.1

1943

ASB-31A METALLURGICAL LITERATURE CLASSIFICATION

FROM: 537.222.1

1943

LIST AND INDEX ORDERS										PROCESSING AND PROPERTY INDEX										LIST AND INDEX ORDERS																																																																					
538.566.2 : 621.396.11										1375																																																																															
<i>Theory of the coastal refraction of electromagnetic waves. GUDIMENKO, G. A. J. Phys., USSR, 6, 5, pp. 185-209, 1942. [See Abstr. 1980 (1943)]. The boundary conditions for propagation over a discontinuity of ground are derived, and are used to formulate an integral equation for the vertical electrical field, which is the basis of the problem. The special case of an infinite straight coastline is analysed in detail, and an approx. solution is obtained for the field at ground level. It is shown that, after a deviation at the coast, the direction of propagation returns asymptotically towards that of the primary wave. Some general arguments concerning the approx. solution in the case of irregular small islands are given, and new formulae for solving the integrals involved, using Bessel's functions, are derived. No numerical or practical results are given.</i> <i>Physics Tech. Inst. Acad. Sci. USSR</i>																																																																																									
ASH-51A METALLURGICAL LITERATURE CLASSIFICATION																																																																																									
<table border="1"> <thead> <tr> <th colspan="10">FIRST NAME</th> <th colspan="10">SECOND NAME</th> <th colspan="10">THIRD NAME</th> </tr> </thead> <tbody> <tr> <td colspan="10">GUDIMENKO</td> <td colspan="10">G. A.</td> <td colspan="10"></td> </tr> </tbody> </table>																														FIRST NAME										SECOND NAME										THIRD NAME										GUDIMENKO										G. A.																			
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2672
 Theory of the Coastal Refraction of Electro-
 magnetic Waves. G. G. Gurevich, Zh. teoret. i eks-
 per. fiz. 1964, No. 3, 1480-1491, 14 figs, 10 refs.
 in Russian. English transl. in Soviet Physics
 Doklady, 1964, Vol. 7, No. 1, p. 185.
 The difficulties of reconstructing the pro-
 pagation of electromagnetic waves in the presence of
 three different media (sea, air, and ground) are pointed
 out, and a simplified treatment of the problem
 is presented. The propagation of the waves along
 a boundary plane between the medium air and
 sea and its modification and dispersion boundary
 conditions are, for the electric field component
 normal to the surface of the ground, are derived
 using the fact that for sufficiently high conductivity
 of the medium the fall of the intensity of the field
 penetrating it does not depend on the character
 of the field outside the medium. From these con-
 ditions, assuming that the sea is an ideal conductor
 and also that the surface of the earth is a horizontal
 plane, an integral equation (21) of the component
 normal to the surface of the ground of the prob-
 lem is obtained. This is the main equation of the prob-
 lem; an exact solution of which would give a com-
 plete answer. In the present paper an approximate
 solution (23) of the equation is found and its implica-
 tions are discussed in detail for the case of plane waves
 impinging on an unlimited rectangular coastal (central
 consideration of the solution for the case of small
 islands of arbitrary shape). Formulas are given
 for its electric field, field induction, integrals
 characterizing local properties.
 This is the paper (Gurevich, 1964, ref. 19) and
 1964, ref. 19.

5A

621.315.611 : 621.3.015.51

1340

Times involved in the thermal breakdown of solid insulants. GRUNBERG, G. A., KONTOROVITSCH, M. I., AND LEHIDIV, N. N. *J. Phys., U.S.S.R.*, 5, 5 6, pp. 339-356, 1941. The time characteristic for the thermal breakdown of capacitors is studied theoretically. The mathematical expression of the problem is found to consist partly of non-linear differential equations, the solutions of which are obtained by an approx. method. For certain types of capacitors a simple solution is obtained which enables the influence of the heating process, dimensions and the properties of the solid dielectra to be calculated. The approx. solution is compared with certain accurate solutions obtained by numerical integration of the original different il equations and found to be in agreement. A. M. T.

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ASH S.E.A. METALLURGICAL LITERATURE CLASSIFICATION

SA

B 64
f

Short-circuit heating of h.v. cables. GRUNBERG, G.
J. Phys., U.S.S.R., 4, 5, pp. 463-472, 1941.—The
 author gives an exact solution of the problem [Abstr.
 273 (1942)] neglecting, as in the earlier article, the
 movement of the oil. An operational method is
 used and the result expressed in a formula con-
 venient for practical use. Finally, it is shown how
 a similar method can be used in the case of a short-
 circuit current of varying magnitude, but this solution
 is not developed in detail. W. W. C.

VOL. XLV.—8.—1942.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

LIST AND TWO ORDERS																										PROCESSES AND PROPERTIES INDEX																									
ASAC SLA METALLURGICAL LITERATURE CLASSIFICATION																										BELLIT ONE																									
54																										B 64																									
The calculation of short-circuit heating of h.v. cables. GRUNBERG, G., AND SONTZ, M. J. <i>Phys. U.S.S.R.</i>, 4, 1-2, pp. 97-112, 1941.—The temperature rise of the conductor of an oil-filled cable and the temperature distribution in oil and insulation at any instant during a short-circuit is calculated by the method of successive approximations. Movement of the oil is neglected and constant current assumed, but the increase in conductor resistance with rising temperature is taken into account. The first approximation neglects the heat transmitted to oil and insulation; from this temperature the transmitted heat is calculated and the first approximation to temperature is corrected. It is shown that this second approximation is within 1 to 2% of the correct value and thus sufficiently accurate. The formula which is given for the second approximation includes only simple functions and probability integrals. A formula is also given without derivation for the third approximation. [Abstr. 274 (1942)].																										f																									
W. W. C.																																																			

GRUNBERG, G. A.

"On the Method of Solving the Fundamental Problem of Electrostatics
and Related Problems, II," Zhur. Phys., 213, no. 3, vol. 2, 1940.

Dept. for Theoretical Physics, Industrial Inst., Leningrad.

GRUBERG, G. A.

"Concerning Several Theorems of a Perturbation Theory and
Especially its Application in the Non-Stationary Phenomena Theory in Vacuum
Tubes," Dokl. Ak. Nauk SSSR, 25, No. 1, 1939.

Inst. of Industry, Leningrad.

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900051-6

The influence of a homogeneous magnetic field on the motion of electrons between coaxial cylindrical electrodes
G. A. Grinberg and V. S. Volkenshtein *J. Tech. Phys.*
U. S. S. R. 19, 36 (1948) Math. John F. Link

A S M O L A M P R E : I Y L F A L U T H A T L W F S I A S S I C I A T I O N

3A

2333. On the Operation of a Cylindrical Diode with H.F. Anode Potential. G. Grünberg and A. Blisnjuk. *Techn. Phys., U.S.S.R.* 8:1, pp. 3-18, 1938. *In German.*—In a previous paper [see Abstract 2064 (1938)] Grünberg has given the theory relative to a tube with cylindrical electrodes and constant anode potential on which is superimposed a smaller variable component. When the variable component is of irregular wave form calculations are, in general, very complex, but when the variable component is sinusoidal the calculations are much simplified. In this case it is shown that the tube current is made up of one part which is independent of the time, on which is superimposed a sinusoidal component of the same frequency as that of the variable component of the anode potential.

A. W.

B 66
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ASAC SLA METACONFLUENT LITERATURE CLASSIFICATION

1

3238. Initial Current in Valves on Sudden Application of Surge Voltage. G. Grönberg. *Techn. Phys., U.S.S.R.* 4. 6. pp. 485-492, 1957. *In German.*—In a previous paper (see Abstract 3065 (1956)) a solution of the above problem was given for a plane parallel diode, the solution, however, only being valid up to the time when either the first electrons given out from the cathode have reached the anode or, if this occurs earlier, before the electric field-strength E_k at the cathode has vanished. This will occur when the emissive power of the cathode is large, with a sufficiently low anode voltage. The case where E_k vanishes before the initial electrons have reached the anode is now analysed and it is shown that one of the fundamental equations previously given is also

applicable to this case. A solution is obtained for this second period in terms of elliptic functions for a constant anode voltage. The case is next considered where a perpendicular magnetic field is superposed on the electric field and a solution is obtained for the initial motion of the electrons in a form similar to one previously given, differing only in the order of its Bessel functions.

A. W.

ASAC SEA METALLURGICAL LITERATURE CLASSIFICATION

4696. Action of a Homogeneous Magnetic Field on the Motion of Electrons between Coaxial Cylindrical Electrodes. G. Grünberg and V. Wolfenstein. *Techn. Phys. U.S.S.R.* 4. 3. pp. 170-190, 1937. *In German.*—In this paper, which is almost wholly mathematical, it is first shown that if the initial velocity of the electrons can be neglected, the solution may be obtained by the solution of a second-order differential equation having only a single parameter $\mu = 11.4 \cdot r^2 / l^2$, when l represents the field-strength, r the radius of the cathode and l the anode current. Tables of the appropriate integrals are given to facilitate calculations of the electron paths. G. E. B.

SA B66
f

2065. Initial Current in an Electron Tube on Sudden Application of a Surge Voltage. G. Grünberg. *Techn. Phys., U.S.S.R.* 3, 2, pp. 101-110, 1938. *In German.* The method applied to the discussion of the effects in electron tubes with rapidly varying anode voltages (see preceding Abstract) is here used for the calculation of the initial current flowing through an electron tube with plane electrodes when a surge voltage is applied to the anode. Assuming the wave-form of the applied voltage to be known, the behaviour with time of the current through the tube is given by a linear differential equation of the second order, whose solution is obtained in terms of Bessel's functions of order $1/3$ and of purely imaginary argument. As an example the case of the application of a constant anode voltage is discussed. A. W.

ASAC-3-A METALLURGICAL LITERATURE CLASSIFICATION

SA

B66
f

2064. Theory of Operation of Electron Tubes with Rapidly Varying Anode Voltage. G. Grünberg. *Techn. Phys. U.S.S.R.* 3, 1 pp. 66-80, 1936. In German. --The cases of (a) plane electrodes and (b) cylindrical electrodes are treated separately under certain simplifying assumptions. The general theory developed for plane electrodes is shown to give Benham's formulae when applied to small variable amplitudes. For cylindrical electrodes the solution in the case of small amplitudes is dependent on two auxiliary functions $W_1(Z)$ and $W_2(Z)$, which satisfy a linear differential equation of the second order. A table of the values of these functions from $Z = 0$ to $Z = 7.5$ is given. Beyond the latter value asymptotic approximations can be used for evaluating the functions. The case of finite amplitudes will be treated in a subsequent paper. A. W.

ASH 514 METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS																										3RD AND 4TH ORDERS																									
PROCESSES AND PROPERTIES INDEX																																																			
1106. Theory of Split-Anode Magnetron. G. Grünberg and W. Lukoschukow. <i>Techn. Phys., U.S.S.R.</i> 3, 2, pp. 482-492, 1930. In German. --To elucidate the special properties of the static characteristic of the split-anode magnetron which determine the excitation of the so-called dynatron oscillations, whose period is much greater than the path time of the electrons in the apparatus, an investigation of the characteristics of the motion of the electrons was made, a graphic analytical method being employed to construct a series of electron paths. These, together with analysis of the field in the magnetron, show that under certain relations between the electric and magnetic fields the electrons accumulate in a region near the half anode with the lower potential. The existence of a region of this kind explains qualitatively the features of the static characteristic of the magnetron. The mathematical basis of the graphical method used for determining the electron paths is given in an Appendix. A W.																																																			
AS W 55 A METALLURGICAL LITERATURE CLASSIFICATION																																																			

Plane-parallel flow of fluid with time-dependent conductance in
a transversal magnetic field. Zhur. tekhn. fiz. 33 no.11:
1384-1387 N '63.

Solution of three-dimensional static and wave problems for a
screen shaped as an infinite thin sectorial plate. Ibid.:1387-1391

Solution of the static and wave problems for screens shaped as a
cone or part of a conical surface. Ibid.:1392-1394 (MIRA 16:12)

1. Fiziko-tekhnicheskii institut imeni A.F.Ioffe AN SSSR, Leningrad.

GORNISHTSEY, D.K.; GUDNOV, A.A.; KOSOLAPOV, A.I.; LEYPTSEIG, A.V.;
 MEL'NIKOV, V.M.; MOKSHATSEV, K.D.; PRADKIN, G.S.; CHERSKIY,
 E.V.; TROPIMUK, A.A., akademik, nauchn. red. vyp.; ROZHROV,
 I.S., glav. red.; KOBELYATSKIY, I.A., zam. glav. red.;
 SHATALOV, Ye.G., zam. glav. red.; BONDARENKO, V.I., red.;
 GRIMBERG, G.A., red.; YELOVSKIKH, V.V., red.; NUSANOV, B.S.,
 red.; SEMENOV, G.T., red.; TKACHENKO, B.V., red.; KALANTAROV,
 A.P., red. izd-va; GUSEVA, A.P., tekhn. red.

[Basic stages of the geological development and prospects for
 finding oil and gas in the Yakut A.S.S.R.] Osnovnye etapy geo-
 logicheskogo razvitiia i perspektivy neftegazonosnosti Iakut-
 skoi ASSR. [by] D.K. Gornishtein i dr. Moskva, Izd-vo AN SSSR
 1963. 238 p. (MIRA 16:12)

(Yakutia--Petroleum geology)
 (Yakutia--Gas, Natural--Geology)

GRINBERG, G.[Grinbergs, G.] (Riga); SKUDRA, A.(Riga)

Optimum vibromixing conditions of asphalt concrete. Vestis Latv ak
no.9:61-66 '60. (EEAI 10:9)

1. Akademiya nauk Latviyskoy SSR, Institut stroitel'stva i arkhitektury.
(Asphalt concrete)

GRINBERG, G. (Ashkhabad).

Twist. Prom. koop. no.5:20-21 My '58.

(Textile machinery)

(MIRA 11:4)

SVISHCHUK, A.A.; GRINBERG, F.L.; BASALKEVICH, Ye.D.; OVERCHUK, Ye.D.

Preparation of trimethylhydroquinone. Ukr. khim. zhur. 29 no.4:
411-412 '63. (MIRA 16:6)

1. Institut organicheskoy khimii AN UkrSSR.
(Hydroquinone)

SVISHCHUK, A.A.; GRINBERG, F.L.; YATSENKO, S.V.

Synthesis of acetylenic glycols C_{20} . Ukr. khim. zhur. 28
no.1:84-87 '62. (MIRA 16:8)

1. Institut organicheskoy khimii AN UkrSSR.

Reduction of 5-Bromine-3,6-dinitropseudocumene into 3,6-diamino-^{73-1-14/26}
pseudocumene.

SUBMITTED: June, 10, 1956.

ASSOCIATION: Institute of Organic Chemistry, Academy of Sciences,
Ukrainian S.S.R.

AVAILABLE: Library of Congress

Card 2/2

Grinberg, A. I.

AUTHOR: Grinberg, F. L. and Svishchuk, A. A.

73-1-14/26

TITLE: Reduction of 5-Bromine-3,6-Dinitropseudocumene into 3,6-Diaminopseudocumene. (Vosstanovleniye 5-Brom-3, 6-Dinitropsevdokumola v 3,6-Diaminopsevdokumol.)

PERIODICAL: Ukrainskiy Khimicheskii Zhurnal, 1957, Vol.23, No.1, pp. 79 - 81 (USSR).

ABSTRACT: The authors attempted to establish reaction conditions under which the reduction of 5-bromo-3,6-dinitropseudocumene would be accompanied by a reduction of the nitro-group and under which the substitution of the bromine atom by hydrogen would occur. 3,6-diaminopseudocumene is obtained. This is an intermediate product during the synthesis of α -tocopherol. The reduction of both nitro-groups and the substitution of the bromine atom by hydrogen was achieved by the catalytic hydrogenation of 5-bromo-3,6-dinitropseudocumene in the presence of nickel catalysts. An 86% yield was obtained. Experimental details of the electrolytic reduction of the starting material as well as of the reduction with hydrogen in the presence of a catalyst are given. Results of the latter process are tabulated in table 1. There are 1 table and 7 references, 1 of which is Slavic.

Card 1/2

GRINBERG, F.L.

191. Use of infrared absorption for characterizing the quality of chlorophyll. A. F. GRINBERG, A. F. MALIN, A. A. STOLBUNOV and A. L. GRINBERG. *Ukr. Khim. Zh.*, 1966, 12 (6), 1042-1047, 1047 (transl. Russ.). Abstr. No. 6, 450. — Infrared spectrometry on the single-beam vacuum spectrograph VIKS-8 within the limits 2 to 18 μ is used for the study of a series of forms of phytyl (II). I, freshly separated from native chlorophyll, was used as standard. The method of IR spectrometry may be used for the evaluation of the quality of I employed in the synthesis of (II)-a-micophenol. C. D. KOPPIN

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Grinberg, F. L.

USSR/Scientific Organization - Conferences

Card 1/1 Pub. 116 - 29/30

Authors : Grinberg, F. L.

Title : Conference on problems of chemical investigation of vitamins

Periodical : Ukr. khim. zhur. 21/3, 427-428, June 1955

Abstract : Minutes are presented of a special meeting organized by the Acad. of Sc., Ukr. SSR, Institute of Organ. Chem. and the All-Union Scient. Res. Vitamin Institute, USSR held during December 9 - 11, 1954 in Kiev. The main topics of the conference were chemical studies of vitamins.

Institution :

Submitted :

GRINBERG, L.

U.S.S.R.

[Stability of carotene. P. L. Grinberg, A. A. Mironov, I. G. Savinov, and N. A. Shchegolev (Inst. Chem., Acad. Sci. U.S.S.R., Kiev). *Vysokomol. Soedin. Ukr. S.S.R.*, 1, 119-57 (1959); *Izv. Akad. Nauk Ukr. S.S.R.*, 1, 119-57 (1959); *Izv. Akad. Nauk Ukr. S.S.R.*, 1, 119-57 (1959).] Studies were conducted on the decompn. of carotene as a result of the catalytic action of certain metals, atm. O, temp., light, acids, and alkalies. The products formed were found to be of a very complex compn. To identify the single constituents of the complex column chromatography was used. The decompn. of carotene without presence of atm. O under the influence of temp. (heating) or light proceeds according to the scheme: *trans*-carotene $\rightarrow$ *cis*-carotene $\rightarrow$ colorless compds. formed by the decompn. of the carotenoid structure. E. W.

CA 110

Chemical nature of coloring matter of sunflower petals
B. G. Sinov and B. L. Grinberg. *Doklady Akad. Nauk*
S.S.R. 73, 145-7 (1959). Extn. with petr. ether-
Me₂CO under CO₂, followed by chromatography of the
ext. on MgO and Al₂O₃, revealed the presence of β -
carotene, a very closely allied cryptoxanthin, C₄₁H₅₆O
(having 50% of carotene vitamin activity), luteoxanthin,
C₄₀H₅₄O₂, which formed the bulk (50%) of the total
pigments. G. M. Kiselev

GRINBERG, F. L.

Chromatographic study of the primary products of the catalytic oxidation and isomerization of carotene. F. L. Grinberg and G. M. Kosolapoff. *Chem. Abstr.* 1958, 52, 10, 348. (Russian) Cf. 10, 551920. Carotene treated with O₂ at 40° in CCl₄ or sunflower oil yields products which form a range of colored zones after adsorption on Al₂O₃; these include stereoisomers of carotene and its oxides and aldehydes formed by opening of one of the rings. These products are either devoid of hind. a test of possess it to a much smaller degree than carotene. The probably detected products are: *trans*-carotenes V, V', E, D, and E, β -carotene diepoxide, δ -carotene monoepoxide, mutachrone (isomeride of the epoxide), antichrone, δ -hydroxycarotene, β -apo-2-carotenol and β -apo-4-carotenol. Cu²⁺ accelerates the oxidation.

G. M. Kosolapoff

GRINBERG, F. L.

Grinberg, F. L. and Savinov, B. G. "Selection and activation of
absorbents for chromatographic separation of the isomers of
carbinol and its oxidation products," Ukr. Khim. zhurnal, Vol. XV,
Issue 1, 1949, p. 41-52, - Bibliogr.: 1. 52

SG: U-5241, 17 December 1953, (Leton's 'Zhurnal' in Kh. Ste. ay, No. 22, 1945)

Isomerization of carotene. B. G. Savinov and F. L. Grinberg. *Uspekhi Khim.* 17, 74-84 (1948). Review with 28 references. G. M. Kosolapoff

ASAC 255- METALLOGRAPHY LITERATURE CLASSIFICATION

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CA Wild rose seed oil as a source of carotene Gumbel, <i>Farmer's Bulletin</i> and 1-10-11-12-13-14-15-16-17-18-19-20-21-22-23-24-25-26																									
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A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
CA 1c The synthesis of 1,3-dimethylxanthine (theophylline). E. L. Gunberg, <i>J. Applied Chem. (U. S. S. R.)</i> 13, 1461 (1940, French, 1463 (1940)). The Traube method (cf. <i>Ber.</i> 33, 3052 (1900)) was used with certain modifications in respect of the preparation of intermediate compounds. The formyl derivative of 1,3-dimethyl-1,3-diamino-2,4-dihydroxypyrimidine was prepared by boiling with 47-48% HCO₂H for 1-1.5 hrs. It was converted into theophylline by treatment with 3% a/c. KOH and by acidifying with HCl. Theophylline, twice recrystallized from hot water with C treatment, m. 261-5. The yield of theophylline was 50% and higher. A. A. Podgorny																									
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Synthesis of mercuric acetate complexes of sodium N-allylsalicylamide-O-acetate (the diuretic "mersaline").
 F. L. Grinberg. *Farmlatsy* 1940, No. 6, 12-16. A stable aq. soln. was prepd. of a complex formed by $Hg(OAc)_2$ and $o-C_6H_4(CONHC_2H_5)(OCH_2COONa)$ with theophylline. This product is a powerful diuretic with no side reactions to disturb the patient. Use of Na theophylline simplified the process and improved the yield of final product. The complete synthesis of mersaline involves etherifying salicylamide with $ClCH_2COOEt$, allylating the amide group with $BrCH_2CH=CH_2$, hydrolyzing in aq. NaOH, reaction with $Hg(OAc)_2$, and treating the Na salt of the resulting complex with Na theophylline. Procedures are described for each step.
 Julian F. Smith

a boiling water bath and the correctness of the reaction was observed by the formation of a reddish-brown ppt. with $\text{Ph}(\text{OAc})_3$ (formation of a lemon-yellow ppt. shows that the reaction has proceeded in a different direction). The hot liquid was poured (for the sepn. of the Zn dust) into 500 ml. of water contg. 15 g. HCl (d. 1.19). The contents of the flask was agitated with alc. contg. HCl and added to the main portion, forming a yellow and a white ppt. in water. The liquid with the ppt. was cooled and filtered. III, dried at 50-60°, m. 149-150°; yield, 72% (2). To 5 g. of $p\text{-AcNHCH}_2\text{CH}_2\text{SCH}_3$ in 100 ml. of 40% AcOH was added 4 g. Zn dust and 4 ml. of 10% HCl . The reaction mixt. was heated on the water bath until the evolution of H_2 ceased, and was then poured into a satd. soln. of NaCl , yielding 76% of III. (3) $p\text{-Acetylaminobenzene sulfonic acid}$ was prepd. as follows: 170 g. of the moist sulfonyle chloride obtained from 57.5 g. of acetanilide was introduced in small amts. into a strongly undercooled mixt. of 80 g. of Zn dust and 250 ml. alc., left overnight at room temp. and the residue, consisting of the Zn salt of the $\text{AcNHCH}_2\text{CH}_2\text{SO}_3\text{H}$ was removed by suction and washed with alc. The Zn salt was mixed with 100 ml. water, heated on a water bath and converted into the Na salt by adding 100 ml. of a 20% Na_2CO_3 soln. The filtrate of the above mixt. was concd. to 30-40 ml. and to the cooled soln. was gradually added 60% H_2SO_4 . The needle-shaped crystals of III m. at 141° (decompn.), yield, 50-55% based on the acetanilide. (4) Nitro- $p\text{-acetylaminophenyl acetate}$ was prepd. by dissolving 16.7 g. (0.1 mol.) of III in 100 ml. alc. and adding 10 g. of NaOH (1 mol.) and 100 ml. warm alc. The turbid liquid was filtered and 10 g. (1 mol.) of $p\text{-O}_2\text{NC}_6\text{H}_4\text{Cl}$ was added and the mixt. heated for 15 min. The cooled product was first washed with alc. and then with water for the removal of Cl^- ions. The product m. sharply at 193°; yield, 85-90%. (2) reference.

A. A. Buchling

[illegible]

1ST AND 2ND ORDERS		PROCESSING AND PREPARATION	
Synthesis of alkyl substituted carbamides 1-1 Grubberg. <i>Org. chem. Ind.</i> (U.S.S.R.) 6, 313 (1939). $\text{NH}_2\text{CONHNO}_2$ and NH_2Me give NH_2CONHMe in 50% yield. Known methods for prepn. of CO NHMe are described. R.C.P.A.			
ASAC 3, A METALLURGICAL LITERATURE CLASSIFICATION			

1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									
BC										B-II-2									
Composition of oil of Ukrainian <i>Mentha crispata</i>. T. S. Kuznetsov and V. L. Gerasimov (J. Appl. Chem. Russ., 1935, 8, 1221-1223).—Cineole, linalool (56-65%), carvone (12-13%), and limonene were identified. R. T.																			
ASH-11A METALLURGICAL LITERATURE CLASSIFICATION																			
1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									

17

EXTRACTS OF THE MARSH-MALLOW ROOT. A. D. ROZENFELD AND E. L. GRINBERG
Form. 24ur. 7, 1931 4(1932) - Lawascek's viscometer was used to det. the amt. of gum
extd. from the root by the pharmacopœia methods, which were found to be inefficient.
LEO NASARKYCH

ASH 35A METALLURGICAL LITERATURE CLASSIFICATION

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A B C D E F G H I J K L M N O P Q R S T U V W X Y Z AA AB AC AD AE AF AG AH AI AJ AK AL AM AN AO AP AQ AR AS AT AU AV AW AX AY AZ BA BB BC BD BE BF BG BH BI BJ BK BL BM BN BO BP BQ BR BS BT BU BV BW BX BY BZ CA CB CC CD CE CF CG CH CI CJ CK CL CM CN CO CP CQ CR CS CT CU CV CW CX CY CZ DA DB DC DE DF DG DH DI DJ DK DL DM DN DO DP DQ DR DS DT DU DV DW DX DY DZ EA EB EC ED EE EF EG EH EI EJ EK EL EM EN EO EP EQ ER ES ET EU EV EW EX EY EZ FA FB FC FD FE FF FG FH FI FJ FK FL FM FN FO FP FQ FR FS FT FU FV FW FX FY FZ GA GB GC GD GE GF GG GH GI GJ GK GL GM GN GO GP GQ GR GS GT GU GV GW GX GY GZ HA HB HC HD HE HF HG HH HI HJ HK HL HM HN HO HP HQ HR HS HT HU HV HW HX HY HZ IA IB IC ID IE IF IG IH II IJ IK IL IM IN IO IP IQ IR IS IT IU IV IW IX IY IZ JA JB JC JD JE JF JG JH JI JJ JK JL JM JN JO JP JQ JR JS JT JU JV JW JX JY JZ KA KB KC KD KE KF KG KH KI KJ KL KM KN KO KP KQ KR KS KT KU KV KW KX KY KZ LA LB LC LD LE LF LG LH LI LJ LK LM LN LO LP LQ LR LS LT LU LV LW LX LY LZ MA MB MC MD ME MF MG MH MI MJ MK ML MN MO MP MQ MR MS MT MU MV MW MX MY MZ NA NB NC ND NE NF NG NH NI NJ NK NL NO NP NQ NR NS NT NU NV NW NX NY NZ OA OB OC OD OE OF OG OH OI OJ OK OL OM ON OP OQ OR OS OT OU OV OW OX OY OZ PA PB PC PD PE PF PG PH PI PJ PK PL PM PN PO PP PQ PR PS PT PU PV PW PX PY PZ QA QB QC QD QE QF QG QH QI QJ QK QL QM QN QO QQ QR QS QT QU QV QW QX QY QZ RA RB RC RD RE RF RG RH RI RJ RK RL RM RN RO RP RQ RR RS RT RU RV RW RX RY RZ SA SB SC SD SE SF SG SH SI SJ SK SL SM SN SO SP SQ SR SS ST SU SV SW SX SY SZ TA TB TC TD TE TF TG TH TI TJ TK TL TM TN TO TP TQ TR TS TT TU TV TW TX TY TZ UA UB UC UD UE UF UG UH UI UJ UK UL UM UN UO UP UQ UR US UT UU UV UW UX UY UZ VA VB VC VD VE VF VG VH VI VJ VK VL VM VN VO VP VQ VR VS VT VU VW VX VY VZ WA WB WC WD WE WF WG WH WI WJ WK WL WM WN WO WP WQ WR WS WT WU WV WW WX WY WZ XA XB XC XD XE XF XG XH XI XJ XK XL XM XN XO XP XQ XR XS XT XU XV XW XX XY XZ YA YB YC YD YE YF YG YH YI YJ YK YL YM YN YO YP YQ YR YS YT YU YV YW YX YY YZ ZA ZB ZC ZD ZE ZF ZG ZH ZI ZJ ZK ZL ZM ZN ZO ZP ZQ ZR ZS ZT ZU ZV ZW ZX ZY ZZ																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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CA Iodine value for determination of purity of peppermint and spearmint oils. F. L. GRINBERG. <i>Farm. Zhur.</i> 4, 219-23(1931).--A general discussion of the use of I value in the analysis of essential oils with special reference to peppermint and spearmint oils. LEO NAKAROVICH																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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ACCESSION NR: AT5000975

i -th node, then $N = k_1 k_2 \dots k_n$ in the p -nary system. Any potential coloring one-to-one corresponds to a certain N (which may also be called coloring). Thus, a coloring will be correct if $k_i \neq k_j$, $i < j$, where the pair (i, j) runs through all pairs of numbers of adjacent nodes. Upon defining the "correct start" of coloring, etc., a rule is formulated for obtaining all possible variants of correct coloring and equivalent coloring of the graph in question. Complete lists of correct colorings for three different graphs were obtained on digital computers; they are used for verifying the method; the machine time is also reported. Orig. art. has: 3 figures and 6 formulas.

ASSOCIATION: Institut elektroniki i vychislitel'noy tekhniki AN LatSSR
(Institute of Electronics and Computer Technology, AN LatSSR)

SUBMITTED: 00

ENCL: 00

SUB CODE: DP

NO REF SOV: 004

OTHER: 006

Card 2/2

ACCESSION NR: AT5000975

S/2690/64/006/000/0143/0153

AUTHOR: Grinberg, E. Ya.; Ilzinya, I. G.

TITLE: Coloring the nodes of nonoriented graphs

SOURCE: AN LatSSR. Institut elektroniki i vychislitel'noy tekhniki. Trudy, v. 6. Riga, 1964. Avtomatika i vychislitel'naya tekhnika (Automation and computer technology), no. 7, 143-153

TOPIC TAGS: graph, graph coloring

ABSTRACT: Methods of graph node coloring suggested by a few Soviet and Western authors are reviewed and criticized. An improvement based on these premises and terms is suggested. A coloring in which like colors of two adjacent nodes are forbidden is called a "correct coloring." Other colorings are called "incorrect." It is assumed that the graph G nodes are numbered by $1, 2, \dots, n$ and the colors by $0, 1, \dots, p-1$ in the p -nary system. If k_i is the color number of the

Card 1/2

BARENBOYM, Ye.L.; GRINBERG, E.Ya. (Liyepaya)

Device for automatically switching off a mercury-quartz lamp. Vop.
kur., fizioter. i lech. fiz. kul't. 27 no.1:69-70 '62. (MIRA 15:5)
(ULTRAVIOLET RAYS--THERAPEUTIC USE)
(ELECTRIC SWITCHGEAR)

Determination of properties ...

S/668/61/000/012/001/004
B102/B138

$$\bar{P}_1 = \int_{y_{l-1}}^{y_l} G(y) dy = \int_{k_l}^{k_{l-1}} \frac{K(k) dk}{\sqrt{1-k^2} \sqrt{\sin^2 2a + k^2 \cos^2 2a}}. \quad (11).$$

The latter integral could not be determined explicitly. For $2a = \pi/2$ it was numerically integrated. The unboundedness of the expression under the integral was where $y \rightarrow 0$ eliminated by the relation

$$\int_{k_l}^k \frac{K(k) dk}{\sqrt{1-k^2}} = 3 \int_{k_l}^k E(k) \sqrt{1-k^2} dk - [E(k) + K(k)] k \sqrt{1-k^2} \Big|_{k_l}^k. \quad (12).$$

This relation is also useful (when $2a \neq \pi/2$) to transform the right-hand part of (11) by partial integration. The author thanks I. N. Lasman for computations. There are 2 figures, 1 table, and 1 Soviet reference.

Fig. 1. Position of the traces of the poles and electrodes on the infinite plane surface of a body in a flow.

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B102/B138

Determination of properties ...

constants which can be chosen so that u and v are dimensionless. With $F_1 = c_1 c_2 F$, a dimensionless "force" F is introduced: $F = |df/dz|^2 = |dw/dz|^2$. For certain regions S and S' (S' lies in the w -plane) the total force $P = \iint_{(S)} F dx dy = \iint_{(S')} du dv$, which is equal to the area of S' . Finally it

is assumed that the parts of the surface of the body which lie between the electrodes be non-conductive. Under these assumptions, the poles shown in Fig. 1 can be conformally mapped onto the complex w -plane as shown in Fig. 2

and $\oint_{\gamma} = Vu/K$, $\oint_M = \oint_0 [v/K' - 1]$; $(dw/dz)^2 = 1/(\cos 2z - \cos 2a)$. The exact module of the latter expression is then given by

$$F(x, y) = \left| \frac{dw}{dz} \right|^2 = \frac{2}{\sqrt{(\operatorname{ch} 2y \cos 2a - \cos 2x)^2 + \operatorname{sh}^2 2y \sin^2 2a}}. \quad (8).$$

The total force P_1 , acting on the electrolyte in the rectangle $0 \leq x \leq \pi/2$,

$y_{1-1} \leq y \leq y_1$ is

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S/668/61/000/012/001/004
B102/B138

AUTHOR: Grinberg, E. Ya.

TITLE: Determination of properties of certain potential fields

SOURCE: Akademiya nauk Latvyskoy SSR. Institut fiziki. Trudy.
no. 12. 1961, 147 - 154

TEXT: A. K. Gaylitis and O. A. Liyelausis (present periodical, p. 143) have studied the action of a magnetic and a current field with intensities perpendicular to the direction of flow of an electrolyte around a body. These studies are continued for a cylindrical body where the flow ϕ is parallel to its generating line. In linear orthogonal coordinates, $x, y, z = x + iy$, the force acting on the electrolyte at (x, y) is given by

$$F_1 = \left| \frac{\partial \phi_0}{\partial x} \frac{\partial \phi_M}{\partial y} - \frac{\partial \phi_0}{\partial y} \frac{\partial \phi_M}{\partial x} \right|. \quad (1).$$

ϕ_0 and ϕ_M denote current field and magnetic field potentials, and are harmonic functions: $\phi_0 = c_1 u + a_1$, $\phi_M = c_2 v + a_2$; $w = u + iv = f(z)$; a_1 and c_1 are

Card 1/8

GRINBERG, E.[Grinbergs, E.] (Riga); KATSNEL'SON, L.(Riga)

About a certain method in chain synthesis with a given impedance.
Vestis Latv ak no.10:79-86 '60. (EEAI 10:9:10)

1. Akademiya nauk Latvyskoy SSR, Institut fiziki.

(Equilibrium of chains) (Impedance (Electricity))

GRINB G, E. Ya., Cand Phys-Math Sci -- (diss) "On the problems of analysis and synthesis of single linear schemes." Mar, 1969. 10 pp with drawings. (Phys-Mech Inst of the Acad Sci USSR. 150 copies. Bibliography at end of text (15 titles) (11, 14-21, 105) .

PA - 2524

On the Analysis and Synthesis of Simple Band Filters.

derived make it possible to solve the various problems of the analysis and synthesis of simple filters. Computation of the polynomials corresponding to the physically realizable filters with passive elements as well as computation of extinction in the case of changed element values or in the case of a detuning of the individual frequency limits makes it possible to determine tolerances and to find a rational method of tuning the filter. In this manner it is possible to investigate the modification of the shape of the selectability curve when adjusting band width. The formulae derived for synthesis permit an optimum solution for the cascade chain with filters also in the case of the existence of additional conditions. (1 illustration and 12 citations from Slav publications)

ASSOCIATION

Physical Institute of the Academy of Science of the Latvian S.S.R.

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Library of Congress

Card 2/2

GRINBERG, E. YA.

AUTHOR GRINBERG, E. YA. PA - 2524
 TITLE On the Analysis and Synthesis of Simple Band Filters.
 (Ob analize i sinteze prostykh mnogokonturnykh fil'trov, Russ.)
 PERIODICAL Latvijas PSR Zinatnu Akad. Vestis, 1957, Vol 1, Nr 1 (114)
 pp 149 - 160 (U.S.S.R.)
 Received: 5 / 1957 Reviewed: 6 / 1957

ABSTRACT: The bases of the general band filter theory are dealt with. Investigations are, however, confined to such filters in which every frequency limit of every cascade is connected only with the preceding and the following frequency limit of one and the same cascade. These filters are described as simple filters. In the first chapter the algorithm of the extended product is determined and several of its properties are given. The extended products can also be used in connection with the computation of continued fractions, orthogonal polynomials, etc. for the purpose of simplifying and abbreviating procedure. In the second chapter analysis of the simple filters is carried out. Algorithm makes it possible to solve all problems connected with this analysis. In the third chapter the criterion for the possibility of a realization of the filter according to a previously given symmetric selectability curve is given and methods for the computation of the elements of such a filter are demonstrated. The formulae

Card 1/2

GRINBERG, E.

Main stratigraphic horizons of the Holocene in Latvian. SSR.

p. 175 (Moksliniai Pranesimai) Vol. 4, 1957, Vilnius, Lithuania

SO: MONTHLY INDEX OF EAST EUROPEAN ACCESSIONS (EEAI) LC, VOL. 7, NO. 1, JAN. 1958

GOLANT, V.Ye.; GRINBERG, G.A.

Solution of a nonlinear equation describing the decomposition of a plasma in a magnetic field, Zhur. tekhn. fiz. 33 no.9:1139-1141 S '63. (MIRA 16:11)

L. Fiziko-tekhnicheskii institut AN SSSR imeni A.F. Ioffe, Leningrad.

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CRINEBO, F.M.

Marginal cyprin, 6000000. Temp: 1-20 MM 3-4-50-257 '64.
(MIRA 18:6)